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Facial fat grafting-related eye and brain fat embolism: A systemic review of reported cases

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ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 January 2026 and was last updated on 17 January 2026.

INTRODUCTION

Review question / Objective To delineate the symptoms, onset patterns, imaging findings, management strategies, and prognostic outcomes of patient with facial fat grafting-related eye and brain fat embolism.

Rationale Autologous facial fat grafting has become an increasingly popular procedure in both aesthetic and reconstructive surgery. Although facial fat grafting is generally considered safer and less invasive than traditional surgical technique, it could also lead to several potential complications. However, rare but devastating complications have increasingly been reported in association with facial injections, including eye and brain fat embolism.

Condition being studied Despite numerous case reports and case series have highlighted the devastating complications associated with facial fat grafting, including vision loss and stroke, a comprehensive synthesis of these events lacks.

METHODS

Search strategy The literature from the earliest record to July 2025 was extensively searched using PubMed, Embase, CENTRAL, Web of Science, and Google Scholar. The search was performed by using the search Terms (“Embolism, Fat "[Mesh]) AND ("Blindness "[Mesh] OR " Cerebral infarction "[Mesh]). We also snowballing the identified articles for relevantmanuscripts.

Participant or population The included studies are required to meet two key criteria: (1) the reported patient must have undergone autologous facial fat grafting, and (2) there must be reliable evidence from imaging or autopsy indicating suspected fat embolism in the brain or eye.

Intervention Autologous facial fat grafting.

Comparator Not applicable.

Study designs to be included Retrospective studies, case reports and case series of facial fat grafting-related eye and brain fat embolism.

Eligibility criteria Exclusion criteria include duplicate publications (in cases of duplication, the version providing more comprehensive clinical information was retained), fat grafting combined with injections of other materials, case series without detailed data on individual patients, and reports lacking more than two essential elements (symptoms, diagnostic investigations, treatments, or outcomes).

Information sources 1. PubMed, Embase, CENTRAL, Web of Science, and Google Scholar
2. References of potentially included studies are screened for additional articles.

Main outcome(s) Patient characteristics, diagnostic investigations, treatment, and outcome of reviewed cases.

Additional outcome(s) Details of eye and brain fat embolism, diagnostic investigations, treatment, and outcome of reviewed cases.

Data management All articles are selected, screened and reviewed, and the data from each article collated and registered into a Microsoft Excel (Microsoft, Redmond, Washington, USA) spreadsheet. Data extraction included demographic data (age, sex, comorbidity, and anatomical defects of head), details of facial fat graft (local or general anesthesia, locations and amount of fat graft, time from surgery to symptoms), Symptoms, diagnostic tools, findings of diagnostic images, treatment, visual and neurological outcome, mortality, and presumed mechanisms of fat embolism.

Quality assessment / Risk of bias analysis Risk-of-bias assessment for included studies is assessed using the Joanna Briggs Institute critical appraisal checklist for case reports.

Strategy of data synthesis Descriptive statistics and narrative synthesis are employed to characterize the overall study sample.

Subgroup analysis We divide the included cases into brain and eye fat embolism. Then we describe the clinical features of each group.

Sensitivity analysis No sensitivity analysis.

Language restriction No language limitation.

Country(ies) involved Taiwan.

Keywords facial fat graft; cerebral infarction; vision loss; fat embolism; facial injection.

Contributions of each author

Author 1 - Wei-Ting Chen - Author 1 conducted searching and identifying possible included articles. She also reviewed included articles and collected data.
Email: vicky830309@gmail.com
Author 2 - Chien-Chin Hsu - Author 2 analyzed the collected data and resolved the disagreement between author 1 and 2. He also refined the original article to final manuscript.
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Author 3 - Kuo-Tai Chen - Author 3 reviewed included article, collected and tabulated data, and wrote original article.
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